Maths

Mathematics, often called “maths” in Britain or “math” in America, was taught in a very basic way during my school days. Historically there was no standardisation of the ways in which maths could be taught in schools around the world.

In 2011, when I was 58, I found out that schools were teaching something called “B.O.D.M.A.S.” or “P.E.M.D.A.S.” or “The Order of Operations” and I was shocked. The “Order of Operations” appears to be a rock-solid part of the current school curriculum universally acknowledged and used and yet I had never heard of it before.

I was at school in the 1960s and we were taught to work a sum from left to right, the same as reading a sentence in the English language. Given two plus three multiplied by seven we would add the two and the three to make five and then multiply by the seven to arrive at the answer: Thirty-Five. Since both students and teachers were using the same system “thirty-five” would be marked correct.

At the age of 58 I found out that modern day students were being taught to do the division and multiplication before the addition and subtraction. Thus two multiplied by seven gives us fourteen and then we add the three. So the correct result is now seventeen instead of thirty-five.

Of course, this difference would not happen in the real world. When dealing with real objects in real life you either have thirty-five or have seventeen. The correct answer can be found by simply looking at the objects and counting.

If you work in a warehouse and have two rows of green boxes with seven boxes in each row and if you also have three rows of yellow boxes with seven boxes in each row then you have thirty-five boxes. It’s easy to understand that you need only look at the two rows and the three rows, knowing that there are seven boxes in each row, and you know you have thirty-five. It’s not an equation. It’s simply counting.

On the other hand, if you have two rows of blue boxes with seven boxes in each row and three other boxes of different colours waiting to be placed somewhere within the warehouse then you have seventeen boxes.

In the real world you can see whether it’s two lots of seven plus three lots of seven or whether it’s two lots of seven plus three individual ones.

In an equation given to students in a maths exam it’s different because there are no boxes at all. The numbers are abstract. They don’t refer to any real object and so a system has to be imposed to govern the order in which the mathematical operations will take place. In my childhood the system imposed was “from left to right”. In modern day schools the system is BODMAS/PEMDAS. Neither system is true in the real world. The “left to right” system and the BODMAS system are both artificial constructions for use in the classroom.

All that matters, and this must be understood, is that the teacher and the student must be using the same system as each other. If the teacher is marking the work according to BODMAS then the student needs to use BODMAS. If the teacher is marking the work according to “left to right” then the student needs to use that method also. The principle here is about coding and decoding.

If two spies are given the same code book to work from they will be able to understand each other’s coded messages. If they have different code books they will not.

I was a child who showed early promise at arithmetic in my junior school. In grown up life I carried on according to the method I had been taught and I remained completely unaware until I was 58 years old that a different system of calculation had been introduced. Nobody told me. I was left out of the loop.

In my late thirties, somewhere around the beginning of the 1990s, I took the Mensa I.Q. test and received a letter telling me that my I.Q. is 160, higher than 99% of the population. As you might imagine this news gave my confidence a bit of a boost after years of struggling through life with whatever shreds of intellect I’d managed to salvage from a substandard education.

The fact that I had been taught the wrong things about mathematics at school didn’t affect my performance in the Mensa tests because the focus of the tests was on pattern recognition rather than arbitrary calculation methods.

It’s hard work trying to discuss any mathematical related topic with people who are mathematicians. There is a void, a gulf, between us.

A mathematician is interested only in that which can be done within known, understood mathematical methods.

Stephen Hawking wrote about the universe from the “Big Bang” onwards but expressed no particular interest in what occurred before the Big Bang. Hawking felt that whatever may have occurred before the bang didn’t affect the mathematics of this universe in which we now find ourselves.

Whatever was there before was nothing to do with understanding our current physics and cosmology.

Sometimes people take this to mean that there wasn’t any existence before that initial explosion. I think there are people walking around who honestly believe that the universe simply exploded out of a singularity for no reason at all and with no causation.

A cosmology of something just deciding to appear out of nothing, BAM!!! Like magic.

Of course that has to be considered as ridiculous because it would contradict everything known in science. There is no action without a prior causation. That’s non-negotiable. Without the principle of cause and effect we would live in a mad magical universe where anything can be anything and change or disappear without warning and for no reason. So

there had to be a prior causation to produce whatever “Big Bang” may have occurred and therefore it follows that some form of the universe already existed.

However, mathematicians prefer to only work with the numbers. Physicists, on the other hand, are not above inventing various dark matters, dark energies, dark flow as a speculative way of getting around the numbers when they don’t add up.

I remember hearing, years ago, a radio programme about imaginary numbers and the square root of minus one. I was fascinated by the contortion of inventing a whole new number system, “Imaginary Numbers”, to cope with something which may have seemed impossible.

How could the square root of minus one be both one and minus one at the same time? What did this mean for the real world? What could it tell us about the way our brains understand information? Could we find real world examples of this square root?

I became a bit obsessed with this “square root of minus one” thing for quite a while. I arrived at a couple of practical examples.

In the first example I imagined a man building a gymnasium with walls ten metres long by ten metres wide. That’s a hundred square metres of floor space.
He decides to put an equipment cupboard in the corner of the space. The cupboard measures one metre by one metre. Thus the cupboard has one square metre of floor space but at the same time this is also minus one square metre from the total floor space of the gymnasium.

The cupboard is one square metre and minus one square metre depending on whether we are talking about the addition of the cupboard space or the taking away of that space from the gymnasium floor area.

So therefore the thing is merely semantics. Simple word play about which side we’re looking at things from. But for mathematicians to preserve the integrity of maths they needed to describe the whole thing in maths terms and that meant doing it with a new number system instead of simply saying “That’s semantics!”.

It’s not only semantics. It also opens the door to a whole field of transactional ideas. Ideas about objects in motion.

A customer buys a loaf of bread from a baker. The customer gives the baker one pound. The baker gives the customer one loaf of bread. The money is minus one pound from the customer at the same time as it is also plus one pound to the baker. The bread is minus one loaf from the baker at the same time as it is also plus one loaf to the customer.

A man leaves New York and travels to Los Angeles. He is minus one man from New York and he is plus one man to Los Angeles.

We are talking about transactions and translations when seen from one end or the other end of the process.

What if the man goes somewhere else instead of L.A? What if he retraces his steps to find where he left his briefcase? What if he thinks he is being followed? Will he lay a false trail and go into hiding? Why is he being followed? What does he know? Will his movement consist of a complex series of forward and backward translations which describe a pattern in spacetime and will that pattern have its own unique reverberation if filled with sound waves?

If he goes into hiding when will he come out? What does this tell us about life, love and self discovery?

But I digress…….